Complete Summary

GUIDELINE TITLE

Birth after previous caesarean birth.

BIBLIOGRAPHIC SOURCE(S)

Royal College of Obstetricians and Gynaecologists (RCOG). Birth after previous caesarean birth. London (UK): Royal College of Obstetricians and Gynaecologists (RCOG); 2007 Feb. 17 p. (Green-top guideline; no. 45). [116 references]

GUIDELINE STATUS

This is the current release of the guideline.

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

Pregnancy

GUIDELINE CATEGORY

Counseling
Evaluation
Management
Prevention
Risk Assessment

CLINICAL SPECIALTY

Family Practice
Obstetrics and Gynecology

INTENDED USERS

Advanced Practice Nurses
Nurses
Physician Assistants
Physicians

GUIDELINE OBJECTIVE(S)

To provide evidence-based information to inform the care of women undergoing either planned vaginal birth after previous caesarean section or elective repeat caesarean section

TARGET POPULATION

Pregnant women who have had a previous cesarean section

INTERVENTIONS AND PRACTICES CONSIDERED

1. Antenatal counseling regarding benefits and risks of vaginal birth after cesarean section (VBAC)
2. Counseling for planned VBAC in special circumstances
    - Preterm birth
    - Twin gestation, fetal macrosomia, short interdelivery interval
3. Intrapartum support and intervention during planned VBAC
    - Epidural anesthesia
    - Continuous fetal electronic monitoring
    - Diagnosis of uterine scar rupture
4. Counseling regarding risks of induction and augmentation of labor (oxytocin)

MAJOR OUTCOMES CONSIDERED

- Rate of vaginal birth after previous cesarean section
- Rate of elective repeat cesarean section
- Maternal morbidity and mortality
- Term perinatal morbidity and mortality
- Term delivery-related perinatal mortality

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Electronic searches were performed in Medline (Ovid version 1996–October 2006) and EMBASE (Ovid version 1996–October 2006) using relevant medical subject headings and text words. Evidence-based reviews and guidance from the American College of Obstetricians and Gynecologists, the Society of Obstetricians and Gynaecologists of Canada, the US Agency for Healthcare Research and Quality, the New Zealand Guidelines Group and the Cochrane Database of Systematic Reviews (2006) were identified and used in the development of this guideline.

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Levels of Evidence

Ia: Evidence obtained from meta-analyses of randomised controlled trials

Ib: Evidence obtained from at least one randomised controlled trial

IIa: Evidence obtained from at least one well-designed controlled study without randomisation

IIb: Evidence obtained from at least one other type of well-designed quasi-experimental study

III: Evidence obtained from well-designed non-experimental descriptive studies, such as comparative studies, correlation studies, and case studies

IV: Evidence obtained from expert committee reports or opinions and/or clinical experience of respected authorities

METHODS USED TO ANALYZE THE EVIDENCE

Review of Published Meta-Analyses
Systematic Review with Evidence Tables

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

Not stated

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

The recommendations were graded according to the level of evidence upon which they were based. The grading scheme used was based on a scheme formulated by the Clinical Outcomes Group of the National Health Service Executive.

Grade A - Requires at least one randomised controlled trial as part of a body of literature of overall good quality and consistency addressing the specific recommendation. (Evidence levels Ia, Ib)

Grade B - Requires the availability of well controlled clinical studies but no randomised clinical trials on the topic of recommendations. (Evidence levels IIa, IIb, III)

Grade C - Requires evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities. Indicates an absence of directly applicable clinical studies of good quality. (Evidence level IV)

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

External Peer Review
Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Following discussion in the Guidelines and Audit Committee, each green-top guideline is formally peer reviewed. At the same time the draft guideline is published on the Royal College of Obstetricians and Gynaecologists Web site for further peer review discussion before final publication.

The names of author(s) and nominated peer reviewers are included in the original guideline document.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

In addition to these evidence-based recommendations, the guideline development group also identifies points of best clinical practice in the original guideline document.

Levels of evidence (**Ia-IV**) and grading of recommendations (**A-C**) are defined at the end of the "Major Recommendations" field.

Antenatal Counselling

How Should Women be Counselled in the Antenatal Period?

B - Women considering their options for birth after a single previous caesarean should be informed that, overall, the chances of successful planned vaginal birth after previous caesarean section (VBAC) are 72 to 76%.

All women who have experienced a prior caesarean birth should be counselled about the maternal and perinatal risks and benefits of planned VBAC and elective repeat caesarean section (ERCS) when deciding the mode of birth. The key issues to include in the discussion are listed below under specific risks and benefits (see "What are the Specific Risks and Benefits of VBAC," below). (Evidence level IV)

The risks and benefits should be discussed in the context of the woman's individual circumstances, including her personal motivation and preferences to achieve vaginal birth or ERCS, her attitudes towards the risk of rare but serious adverse outcomes, her plans for future pregnancies, and her chance of a successful VBAC (principally whether she has previously had a vaginal birth; see discussion under section 6.1 in the original guideline document). In addition, where possible, there should be review of the operative notes of the previous caesarean to identify the indication, type of uterine incision, and any perioperative complications. (Evidence level IV)

What are the Contraindications to VBAC?

C - Women with a previous uterine incision other than an uncomplicated low transverse caesarean section incision who wish to consider vaginal birth should be assessed by a consultant with full access to the details of the previous surgery.

B - Women with a prior history of two uncomplicated low transverse caesarean sections, in an otherwise uncomplicated pregnancy at term, with no contraindication for vaginal birth, who have been fully informed by a consultant obstetrician, may be considered suitable for planned VBAC.

There is limited evidence on whether maternal or neonatal outcomes are significantly influenced by the number of prior caesarean births or type of prior uterine scar. Nonetheless, due to higher absolute risks of uterine rupture or unknown risks, planned VBAC is contraindicated in women with:

- Previous uterine rupture—risk of recurrent rupture is unknown
- Previous high vertical classical caesarean section (200–900/10,000 risk of uterine rupture) where the uterine incision has involved the whole length of the uterine corpus
- Three or more previous caesarean deliveries (reliable estimate of risks of rupture unknown). (Evidence level IIb, III, and IV)

However, it is recognised that, in certain extreme circumstances (such as miscarriage, intrauterine fetal death) for some women in the above groups, the vaginal route (although risky) may not necessarily be contraindicated. A number of other variants are associated with an increased risk of uterine rupture. These include: women with a prior inverted T or J incision (190/10,000 rupture risk) and women with prior low vertical incision (200/10,000 rupture risk). (Evidence level IIa)

What are the Specific Risks and Benefits of VBAC?

B - Women considering the options for birth after a previous caesarean should be informed that planned VBAC carries a risk of uterine rupture of 22–74/10,000. There is virtually no risk of uterine rupture in women undergoing ERCS.

B - Women considering the options for birth after a previous caesarean should be informed that planned VBAC compared with ERCS carries around 1% additional risk of either blood transfusion or endometritis.

B - Women considering planned VBAC should be informed that this decision carries a 2–3/10,000 additional risk of birth-related perinatal death when compared with ERCS. The absolute risk of such birth-related perinatal loss is comparable to the risk for women having their first birth.

B - Women considering the options for birth after a previous caesarean should be informed that planned VBAC carries an 8/10,000 risk of the infant developing hypoxic ischaemic encephalopathy (HIE). The effect on the long-term outcome of the infant upon experiencing HIE is unknown.

B - Women considering the options for birth after a previous caesarean should be informed that attempting VBAC probably reduces the risk that their baby will have respiratory problems after birth: rates are 2–3% with planned VBAC and 3–4% with ERCS.

B - Women considering the options for birth after a previous caesarean should be informed that the risk of anaesthetic complications is extremely low, irrespective of whether they opt for planned VBAC or ERCS.

B - Women considering the options for birth after a previous caesarean should be informed that ERCS may increase the risk of serious complications in future pregnancies.

Planned VBAC In Special Circumstances

How Should Women be Counselled in the Context of Obstetric Complications?

Preterm Birth

B - Women who are preterm and considering the options for birth after a previous caesarean should be informed that planned preterm VBAC has similar success rates to planned term VBAC but with a lower risk of uterine rupture.

Twin Gestation, Fetal Macrosomia, Short Interdelivery Interval

C - A cautious approach is advised when considering planned VBAC in women with twin gestation, fetal macrosomia, and short interdelivery interval, as there is uncertainty in the safety and efficacy of planned VBAC in such situations.

Intrapartum Support and Intervention During Planned VBAC

Where and How Should VBAC be Conducted?

B - Women should be advised that planned VBAC should be conducted in a suitably staffed and equipped delivery suite, with continuous intrapartum care and monitoring and available resources for immediate caesarean section and advanced neonatal resuscitation.

Obstetric, midwifery, anaesthetic, operating theatre, neonatal and haematological support should be continuously available throughout planned VBAC and ERCS. (Evidence level IV)

C - Epidural anaesthesia is not contraindicated in planned VBAC.

B - Women should be advised to have continuous electronic fetal monitoring following the onset of uterine contractions for the duration of planned VBAC.

Early diagnosis of uterine scar rupture followed by expeditious laparotomy and resuscitation is essential to reduce associated morbidity and mortality in mother and infant. There is no single pathognomic clinical feature that is indicative of uterine rupture but the presence of any of the following peripartum should raise the concern of the possibility of this event:

- Abnormal cardiotocograph (CTG)
- Severe abdominal pain, especially if persisting between contractions
- Chest pain or shoulder tip pain, sudden onset of shortness of breath
- Acute onset scar tenderness
- Abnormal vaginal bleeding or haematuria
- Cessation of previously efficient uterine activity
- Maternal tachycardia, hypotension, or shock
- Loss of station of the presenting part

The diagnosis is ultimately confirmed at emergency caesarean section or postpartum laparotomy. (Evidence levels III, IV)

Induction and Augmentation

How Should Women with a Previous Caesarean Birth Be Advised in Relation to Induction of Labour or Augmentation?

B - Women should be informed of the two- to three-fold increased risk of uterine rupture and around 1.5-fold increased risk of caesarean section in induced and/or augmented labours compared with spontaneous labours.

The additional risks in augmented VBAC mean that:

- Although augmentation is not contraindicated it should only be preceded by careful obstetric assessment, maternal counselling, and by a consultant-led decision.
- Oxytocin augmentation should be titrated such that it should not exceed the maximum rate of contractions of four in 10 minutes; the ideal contraction frequency would be three to four in 10 minutes.
- Careful serial cervical assessments, preferably by the same person, are necessary to show adequate cervicometric progress, thereby allowing augmentation to continue.

The intervals for serial vaginal examination and the selected parameters of progress that would necessitate discontinuing VBAC labour should be consultant-led decisions.

When informing a woman about induction (prostaglandin or non-prostaglandin methods) and/or augmentation, clear information should be provided on all potential risks and benefits of such a decision and how this may impact on her long-term health. For example, women who are contemplating future pregnancies may accept the short-term additional risks associated with induction and/or augmentation in view of the reduced risk of serious complications in future pregnancies if they have a successful VBAC. (Evidence level IV)

Definitions:

Grading of Recommendations

Grade A - Requires at least one randomised controlled trial as part of a body of literature of overall good quality and consistency addressing the specific recommendation. (Evidence levels Ia, Ib)

Grade B - Requires the availability of well controlled clinical studies but no randomised clinical trials on the topic of recommendations. (Evidence levels IIa, IIb, III)

Grade C - Requires evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities. Indicates an absence of directly applicable clinical studies of good quality. (Evidence level IV)

Levels of Evidence

Ia: Evidence obtained from meta-analyses of randomised controlled trials

Ib: Evidence obtained from at least one randomised controlled trial

IIa: Evidence obtained from at least one well-designed controlled study without randomisation

IIb: Evidence obtained from at least one other type of well-designed quasi-experimental study

III: Evidence obtained from well-designed non-experimental descriptive studies, such as comparative studies, correlation studies, and case studies

IV: Evidence obtained from expert committee reports or opinions and/or clinical experience of respected authorities

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is identified and graded for each recommendation (see "Major Recommendations" field).

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Appropriate counseling and decision making regarding mode of delivery after previous cesarean birth

POTENTIAL HARMS

- Rates of hysterectomy and transfusion increase in women undergoing vaginal birth after previous caesarean section (VBAC) following two or more previous caesarean births compared to a single previous caesarean birth.
- Planned VBAC carries a risk of uterine rupture of 22–74/10,000. There is virtually no risk of uterine rupture in women undergoing elective repeat caesarean section (ERCS).
- Planned VBAC compared with ERCS carries around 1% additional risk of either blood transfusion or endometritis.
- Planned VBAC carries a 2–3/10,000 additional risk of birth-related perinatal death when compared with ERCS.
- Planned VBAC carries an 8/10,000 risk of the infant developing hypoxic ischaemic encephalopathy.
- There is an increased risk of neonatal respiratory morbidity (defined earlier) among term infants delivered by elective caesarean (3.5–3.7%) compared with vaginal birth (0.5–1.4%).
- The following risks significantly increase with increasing number of repeated caesarean deliveries: placenta accreta; injury to bladder, bowel or ureter; ileus; the need for postoperative ventilation; intensive care unit admission; hysterectomy; blood transfusion requiring four or more units and the duration of operative time and hospital stay.
- Infants of mothers who received epidural analgesia were more likely to be subjected to diagnostic tests and therapeutic interventions (including sepsis evaluation and antibiotic treatment) compared with infants from a matched no-epidural analgesia group

- There is a higher risk of uterine rupture with induction of labour with prostaglandins.

CONTRAINDICATIONS

CONTRAINDICATIONS

- Due to higher absolute risks of uterine rupture or unknown risks, planned vaginal birth after previous caesarean section is contraindicated in women with:
    - Previous uterine rupture—risk of recurrent rupture is unknown
    - Previous high vertical classical caesarean section (200–900/10,000 risk of uterine rupture) where the uterine incision has involved the whole length of the uterine corpus.
    - Three or more previous caesarean deliveries (reliable estimate of risks of rupture unknown)

  However, it is recognized that, in certain extreme circumstances (such as miscarriage, intrauterine fetal death) for some women in the above groups, the vaginal route (although risky) may not necessarily be contraindicated.

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

- These guidelines are "systematically developed statements which assist clinicians and patients in making decisions about appropriate treatment for specific conditions." Each guideline is systematically developed using a standardised methodology. Exact details of this process can be found in Clinical Governance Advice No. 1: Guidance for the Development of RCOG Green-top Guidelines (See the "Availability of Companion Documents" field in this summary.)
- These recommendations are not intended to dictate an exclusive course of management or treatment. They must be evaluated with reference to individual patient needs, resources and limitations unique to the institution and variations in local populations. It is hoped that this process of local ownership will help to incorporate these guidelines into routine practice. Attention is drawn to areas of clinical uncertainty where further research may be indicated.

Limitations of Data Used in This Guideline

There are no randomised controlled trials comparing planned vaginal birth after cesarean section (VBAC) with planned elective repeat caesarean section (ERCS) and this may be an unrealistic aspiration. Evidence for these interventions is obtained mainly from retrospective nonrandomized studies. Furthermore, many of the main outcomes of interest are relatively uncommon. Adequately powered studies require large numbers and these frequently rely on routinely collected data. Consequently, many studies have limitations in terms of definition of exposures and outcomes, ascertainment bias and selection bias. Furthermore, the consequent interstudy heterogeneity precludes reliable meta- analyses. A recently

published study by the National Institute of Child Health and Human Development (NICHD) Maternal–Fetal Medicine Units Network has overcome many of these shortcomings by having a large sample size, a prospective cohort design, and by using standardised definitions for assessing outcomes. However, this comparison is undermined by the fact that the group delivered by ERCS in that study included women in whom planned VBAC was absolutely or relatively contraindicated, such as women with placenta praevia, high numbers of previous caesarean births, or maternal medical disorders. Therefore, the presence of these conditions may have led to an overestimate of the risk of adverse outcomes associated with ERCS.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

IMPLEMENTATION TOOLS

Audit Criteria/Indicators

For information about availability, see the "Availability of Companion Documents" and "Patient Resources" fields below.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better
Staying Healthy

IOM DOMAIN

Effectiveness
Patient-centeredness
Safety

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Royal College of Obstetricians and Gynaecologists (RCOG). Birth after previous caesarean birth. London (UK): Royal College of Obstetricians and Gynaecologists (RCOG); 2007 Feb. 17 p. (Green-top guideline; no. 45). [116 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2007 Feb

GUIDELINE DEVELOPER(S)

Royal College of Obstetricians and Gynaecologists - Medical Specialty Society

SOURCE(S) OF FUNDING

Royal College of Obstetricians and Gynaecologists

GUIDELINE COMMITTEE

Guidelines and Audit Committee

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Authors: Mr R Varma MRCOG, Birmingham; Professor JK Gupta FRCOG, Birmingham; and Professor GCS Smith MRCOG, Cambridge

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Guideline authors are required to complete a "declaration of interests" form.

GUIDELINE STATUS

This is the current release of the guideline.

GUIDELINE AVAILABILITY

Electronic copies: Available in Portable Document Format (PDF) from the Royal College of Obstetricians and Gynaecologists (RCOG) Web site.

Print copies: Available from the Royal College of Obstetricians and Gynaecologists (RCOG) Bookshop, 27 Sussex Place, Regent's Park, London NW1 4RG; Telephone: +44 020 7772 6276; Fax, +44 020 7772 5991; e-mail: bookshop@rcog.org.uk. A listing and order form are available from the RCOG Web site.

AVAILABILITY OF COMPANION DOCUMENTS

The following are available:

- Development of RCOG green-top guidelines: policies and processes. Clinical Governance Advice No 1a. 2006 Nov. Available from the Royal College of Obstetricians and Gynaecologists (RCOG) Web site.
- Development of RCOG green-top guidelines: producing a scope. Clinical Governance Advice No 1b. 2006 Nov. Available from the Royal College of Obstetricians and Gynaecologists (RCOG) Web site.

- Development of RCOG green-top guidelines: producing a clinical practice guideline. Clinical Governance Advice No 1c. 2006 Nov. Available from the Royal College of Obstetricians and Gynaecologists (RCOG) Web site.
- Searching for evidence. Clinical Governance Advice No 3. 2001 Oct. Available from the Royal College of Obstetricians and Gynaecologists (RCOG) Web site.

Additionally, auditable standards can be found in section 10 of the original guideline document.

PATIENT RESOURCES

None available

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